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ABSTRACT

This inquiry was conducted to determine whether an early field experience influences the academic achievement of teaching candidates in subsequent teaching methods coursework. The subjects were secondary education students who had successfully completed a field experience program preceding their enrollment in the methods course. The course was designed to acquaint preservice students with the fundamentals of interacting with students, managing classroom activities, and organizing for instruction. It was determined that those who participated in an early field experience had an opportunity to examine the dynamics of a classroom from the perspective of the teacher. This shift in point-of-view apparently does not have immediate effects on cognitive achievement, but does serve to alert the teacher candidates to the value and importance of techniques and processes presented in subsequent methods coursework. (JD)

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Relations Between Early Field Experiences and Performance in Subsequent Coursework

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Pre-Student Teaching Field experiences are held to be desirable in the preparation of teachers. To illustrate this position the Commission on Education for the Profession of Teaching (ACCTE, 1976) endorsed a field oriented approach to teacher education. Similarly, spokespersons for competency based education (Elam, 1971: Houston, 1974) and teacher centers (Andrews, 1980; Devaney, 1976; Edelfelt, 1972) have accepted a field based approach for the preparation of teachers. The rationale for placing emphasis on early field experiences is associated with teacher educators' desire to make their programs more realistic, practical and stimulating. Logically, field experiences can fulfill these qualities, thereby enhancing the perceived overall effectiveness of a teacher preparation program.

Research addressing the influence of pre-student teaching field experiences in the preparation of teachers is limited. Those studies which have been reported often contain results which do not lend empirical support for endorsing early field experiences. For example, Ingle and Robinson (1965) report no difference in achievement between students observing learners and control students who did not participate in an observation experience. Subsquently, Ingle and Zaret (1968) addressed the issue whether the degree of involvement in a field experience influences course achievement. They reported students who served as tutors for learners performed at the same level on a final examination in an educational psychology course as students who had served only as observers. Expanding on these efforts Hedberg (1979) sought to determine the effects of a field experience which included tutoring, directing small-group instruction, and developing learning stations on achievement in educational psychology coursework. He reported no difference in in performance on a final course examination among field-experience students and control students who attended class but did not participate in a field experience.

Examining perceptions of students regarding their preparation, Marso (1971) found students who had participated in a field experience thought they were more prepared than their counterparts who had not participated in a field experience.

Collectively, these investigations indicate early field experiences do not adversely affect student cognitive attainment in concurrent coursework. Yet these same results do not suggest cognitive attainment of students is enhanced by their participation in a field experience. Given these findings, this investigation has been structured to examine the influence of early field experiences on student cognitive attainment in subsequent not present coursework. Perhaps the influence of a early field experience is delayed, serving to establish a meaningful set for prospective teachers regarding teaching skills addressed in ensuing coursework. Stated another way, teaching candidates should observe first-hand the skills and techniques used by teachers during an early field experience. Later when these skills and techniques are presented and elaborated on in methods coursework a classroom referent for associating the verbal information is recalled by these candidates. Under such conditions the verbal information has high potential for being learned in a meaningful context. This notion of providing a background for associating new information is consistent with the initial components of Gagne's events of instruction (1977) and Klausmeier and Allen's guidelines for instruction (1978).

This inquiry was conducted to determine whether an experiential set is operating in teacher preparation programs which include early field experiences. The following research questions have been phrased to guide this inquiry.

1. Does participation by secondary teaching candidates in an early field experience affect cognitive attainment (course objectives achieved) in a methods of teaching course?

If this question is answered in the affirmative, additional analyses will be conducted regarding the cognitive level of the objectives achieved and the influence of the field experience when entry knowledge is taken into account.

2. Does participation by secondary teaching candidates in an early field experience affect attainment of knowledge level and higher level objectives (application, analysis, synthesis) in a methods of teaching course?

3. Does participation in an early field experience affect cognitive attainment in a methods of teaching course by secondary teaching candidates when entry level knowledge of the students is removed?

PROCEDURE

Sample

Subjects were 139 students enrolled in three different sections of an undergraduate methods of teaching course at Texas A&M University. These students were taught by the same instructor and all were responsible for attaining identical course objectives. The experimental subjects were 61 secondary education students who had successfully completed a field experience preceding their enrollment in the methods course. This field experience places the prospective teacher in a supervised, participatory experience in a secondary school for a minimum of 30 clock hours. There, the teaching candidates are expected to duplicate class materials, monitor study sessions, tutor individual students, and complete classroom observation checklists. The field experience is part of a course designed to enable prospective teachers to determine their

commitment to teaching. An observation/aide period of 3 hours is scheduled each week in a public school. It is hoped the cumulative effect of this on-site experience will enable the candidate to come to view the classroom from the teacher's perspective rather than from the student's point-of-view. Readings and class time (1 hr/wk) on-campus complement these observations through emphases on the following topics related to classroom discipline: child development, curriculum, teacher authority, teacher expectancy, socialization of learners, student rights, management procedures.

Seventy-eight students served as controls in this investigation. Although these students were secondary teaching candidates, they had not completed an early field experience. Random sampling was not possible in this situation since membership to the experimental group was contigent on prior completion of a field experience in a secondary level classroom.

Subjects were primarily of junior classification, with females outnumbering males 2 to 1. The undergraduate methods of teaching course is a requirement for all secondary level certification seeking students who participated in this investigation. Conversely, the early field experience is required only for secondary education majors in educational curriculum and instruction. The early field experience course is typically completed by education majors two semesters prior to enrolling in the methods of teaching course.

Data Collection

The methods of teaching course is designed to acquaint the teaching candidates with the fundamentals of interacting with students, managing classroom activities, and organizing for instruction. Candidates also have an opportunity to develop the instructional skills of selecting important concepts and

generalizations, writing clear and well defined performance objectives, identifying and diagnosing the entering needs of learners, developing remediation activities, planning instructional strategies, and evaluating objectively the effectiveness of their own instruction. Topics of interest to teachers entering the classroom, such as student rights, the teacher and the law, and professional activities are also discussed. These topics form the basis for 30 performance objectives, 19 of which are phrased at the application level, analysis level, or synthesis level of cognitive functioning. Criterion-referenced tests and objective-specific assessments administered throughout the course on designated dates are used to determine candidate accomplishment of the objectives. The criterion referenced tests consist of either 10 multiple choice or 10 true-false items per objective specifically addressing the knowledge and comprehension levels of cognitive functioning. Objective-specific assessments for the higher cognitive order objectives include essay items based on case studies and products of instructional planning, such as, content maps, instructional strategy outlines, and lesson evaluation schemes. Moreover, course grades are based on the total number of objectives achieved during the semester. The variable, total number of objectives achieved served as the primary dependent variable in this inquiry. The other dependent variables namely, number of knowledge level objectives attained; number of higher order objectives attained were obtained from the total number of objectives achieved for the additional analyses of these data.

All sections of the methods of teaching course met two days a week for 75 minutes/class in a conventional university classroom for a total of 45 clock hours of direct contact and formal instruction over the course of a

semester. During the second class meeting, all students were given a 40 item multiple choice test (reliability = .71) to measure their entering knowledge of instructional design and curriculum planning principles. Values obtained from administering this instrument have been used to control for entry level knowledge of the subjects in this inquiry.

RESULTS

This inquiry was conducted to determine whether an early field experience influences cognitive attainment of teaching candidates in subsequent teaching methods coursework. A t-test for unequal variance conducted on the total number of objectives achieved by students in the two groups revealed a significant difference, $t = 3.34$, $p = .001$. The means for the groups were 25.67, and 22.95 for the field-experience and control groups, respectively. These values are summarized in Table I.

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place table I about here

Since the initial research question was answered affirmatively, additional analyses were undertaken. Research question 2 sought to determine whether the early field experience influenced the number of objectives attained at different cognitive levels. Again t tests for unequal variances were used to determine whether significant statistical differences occur when the attained objectives of different cognitive levels for the two groups were compared. Similar values resulted for the comparisons which were made, with $t = 3.04$, $p = .003$ occurring for the number of knowledge level objectives attained and $t = 2.93$, $p = .004$ for the number of higher order objectives achieved. In these comparisons the average number of objectives achieved by the

experimental group exceeded those of the control group. These comparisons are also summarized in table I.

The final research question sought to determine the influence of an early field experience on cognitive attainment of teaching candidates when entry level knowledge of the candidates were removed. Structural equations taking the form of regression models were developed to specifically address this research question. These models and the expression for their comparison are presented in figure 1.

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place figure 1 about here

In model 1, subject cognitive attainment in the secondary methods of teaching course depends on the subject's prior cognitive attainment (knowledge exhibited on course pretest). This model is based on the assumption that cognitive attainment of the teaching candidates is independent of past experiences in field settings. Justification for the inclusion of model 1 in the system of equations developed for this investigation rests with Bloom's assertion (1976) that cognitive entry behavior can account for a significant proportion of variance on related cognitive achievement measures over subsequent learning tasks.

Model 2 presents subject cognitive attainment in the secondary methods of teaching course as a function of the subject's prior cognitive attainment and whether the candidate had participated in an early field experience. Underlying this model is the assumption that cognitive attainment is influenced by the nature of past professional experiences had by the subjects.

Justification for the inclusion of the field experience variable in model 2 is based on the observed effect found in the analysis of the initial research question.

These regression models were analyzed with the expression presented in figure 1. This expression permits us to examine the contribution of the early field experience when the variance contributed by prior knowledge is removed. If the data are consistent with our assumptions, the explanatory power of model 2 should be greater than that of model 1, that is, $R_2^2 > R_1^2$. The increased explanatory power of model 2 then is attributed to whether or not the subject participated in an early field experience. This procedure has been conducted for each of the dependent variables mentioned previously, and the results are presented in table II.

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place table II about here.

The effects attributed to the early field experience in these analyses ranged from 4.6% to 6.7% of the total variance. These effects were found to be statistically significant, $F(1,136)$ 9.77, $p < .01$ for the total number of objectives achieved; $F(1.136)$ 8.99, $p < .01$ for knowledge objectives achieved; $F(1.136)$ 6.56, $p < .05$ for higher order objectives achieved. These results support the position that early field experiences do positively influence cognitive attainment in subsequent methods of teaching coursework.

DISCUSSION

Early field experiences were the focus of this inquiry. Results of this effort, provide expirical support for the inclusion of early field experiences in teacher preparation programs. While the observed effects

of early field experiences on subsequent course achievement are modest, these effects are substantially greater than those reported for field experiences on achievement in education coursework of which the field experience is a part (Ingle, Robinson, 1965; Ingle, Zaret, 1968; Hedberg, 1979). The hypothesized "meaningful set" induced by early field experiences on subsequent learning of teaching skills is consistent with the results of this inquiry. Rather than serving as a source of new information as the field experience likely does when incorporated into a course, the field experience provides a meaningful context for the teaching candidate in subsequent methods coursework. Technical terms and labels associated with instructional and management techniques and processes often confuse and frustrate teaching candidates whose only referent to the classroom is through the eyes of a student. These individuals often resort to memorizing verbal labels in order "to learn" the content, but fail to gain an understanding of what they have memorized, and fail to see any relation between the methods content and the skills required for teaching. Under such conditions, verbal learning suffers and attainment of teaching skills is delayed until the student teaching experience. Conversely, those who have participated in an early field experience have had an opportunity to begin to examine the dynamics of a classroom from the perspective of a teacher. This shift in point-of-view apparently does not have immediate nor dramatic effects on cognitive achievement given the literature cited, but does serve to alert candidates to the value and importance of techniques and processes presented in subsequent methods coursework. Methods content under these latter conditions are not approached as verbal labels to be memorized, but as descriptions of phenomena which have been experienced previously but not described. Thus, meaningful verbal learning is possible

and attainment of teaching skills is enhanced given this context of the classroom. Early field experiences, then may serve to provide a meaningful context for subsequent attainment of teaching techniques and processes thereby contributing in a substantial way to the preparation of a teacher.

model 1: $Y = b_1X + E(1)$

model 2: $Y = b_2X + cH + E(2)$

$$F = \frac{[R_2^2 - R_1^2]/1}{[1 - R_2^2]/136}$$

Y = Cognitive attainment of subjects (number of objectives achieved).

X = Measure of entry-level knowledge of subjects.

H = Early field experience. One if the subject participated in early field experience, zero otherwise.

E(i) = Error-of-prediction vector for model i.

bi = Least squares weight associated with entry level knowledge (X).

c = Least squares weight associated with early field experience variable.

R_2^2 = variance accounted for by model 2.

R_1^2 = variance accounted for by model 1.

F = F ratio (test of significance).

Figure 1

Regression Models and Significance Test Expression for Research Question 3

Table I

T Tests of Cognitive Attainment for Students With and Without Early Field Experiences

Group	N	Total Objectives $\bar{X}$	Total Objectives S.D.	Total Objectives t test	Total Objectives Prob	Knowledge Objectives $\bar{X}$	Knowledge Objectives S.D.	Knowledge Objectives t test	Knowledge Objectives Prob.	Higher Order Objectives $\bar{X}$	Higher Order Objectives S.D.	Higher Order Objectives t test	Higher Order Objectives Prob.
With Field Experience	61	25.67	3.53	3.34	.001	10.02	1.73	3.04	.003	15.62	2.37	2.93	.004
Without Field Experience	78	22.95	5.99			8.87	2.69			14.06	3.86		

Table II

Summary of Information for Statistical Tests Regarding Research Question Three.

Dependent Variable	Total Objectives Achieved	Knowledge Objectives Achieved	Higher Order Objectives Achieved
Number of Learners	139	139	139
R^2 from model 1	.019	.010	.020
R^2 from model 2	.086	.072	.066
$R_2^2 - R_1^2$ (ΔR^2)	.067	.062	.046
F statistic testing Q(3)	F(1,136)**	F(1,136)**	F(1,136)*
	9.77	8.99	6.56

*α < .05, **α < .01

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